

Claims

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 1. A door module for covering a surface cut-out recess in the inside panel of a vehicle door, the door module comprising a substantially rigid structural portion of long glass fiber reinforced plastic, and a substantially elastic functional portion of plastic substantially free of long glass fibers and formed integrally with the structural portion.

2. The door module of claim 1, wherein the functional portion comprises a lip seal extending along the outer rim area of the door module, for sealing a connection between the door module and the inside panel of the vehicle door.

3. The door module of claim 2, wherein the functional portion comprises two lip seals extending in parallel along the outer rim area of the door module, for sealing a connection between the door module and the inside panel of the vehicle door.

4. The door module of claim 1, wherein the vehicle door body is divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim, and the functional portion comprises a drip ledge extending into the wet cell along a lower area of the door module when installed in the vehicle door, for repelling water from a connection between the door module and the inside panel of the vehicle door.

5. The door module of claim 1, wherein the vehicle door body is divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim, and the functional portion comprises one or more wiring harness clips extending in the dry cell.

6. The door module of claim 1, wherein the vehicle door body is divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim wherein the vehicle door body is

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divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim, and the functional portion comprises attachment elements for attaching the door inside trim to the door module.

7. The door module of claim 1, wherein the vehicle door body is divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim, and the functional portion comprises attachment elements for attaching electrical and/or electronic elements to the door module within the dry cell.
8. The door module of claim 1, wherein the vehicle door body is divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim, and the functional portion comprises attachment means for attaching noise reduction elements to the door module within the dry cell and/or the wet cell.
9. The door module of claim 1, wherein the vehicle door body is divided into a wet cell lying between a door outside panel and the door module, and a dry cell lying between the door module and an adjoining door inside trim, and the functional portion comprises a lip for contacting a door window when retracted into the wet cell of the vehicle door, thereby to reduce movements of the door window perpendicular to the window plane.
10. The door module of claim 1, wherein the long glass fibers of the long glass fiber enforced plastic material are staple glass fibers.
11. The door module of claim 1, wherein the glass fiber portion of the long glass fiber enforced plastic material is between 30 and 70%.

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12. The door module of claim 11, wherein the glass fiber portion of the long glass fiber enforced plastic material is approximately 40%.
13. The door module of claim 1, wherein the glass fibers of the long glass fiber enforced plastic material have a length of approximately 20 mm, and a thickness of approximately 0.02 mm.
14. The door module of claim 1, wherein the plastic material is polypropylene.

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15. A mould for manufacturing a door module for a vehicle door by compression moulding, the mould being arranged to receive a long glass fiber enriched plastic material, and for shaping a structural portion of the door module during compression moulding, and comprising one or more cavities of such dimensions that during compression moulding, plastic material substantially free of long glass fibers is forced into at least part of the one or more cavities, thereby to shape a functional portion of the door module.

The mould of claim 15, further comprising a heater for heating the long glass fiber enriched plastic material received in the mould.

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17. The mould of claim 15, wherein the functional structure comprises one or more elastic functional elements such as a lip seal, and the cavity has the inverse shape of the one or more elastic functional elements to be formed during compression moulding.

18. A process of manufacturing a door module for a vehicle door, the process comprising: providing a mould for shaping a structural portion of the door module, the mould comprising one or more cavities;
filling the mould with a long glass fiber enriched plastic material;
exerting pressure on the long glass fiber enriched plastic material received in the mould, wherein said one or more cavities in the mould are of such dimensions that

plastic material substantially free of long glass fibers is forced into at least part of the one or more cavities; and
hardening of the structural and functional portions.

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19.

The process of claim 18, further comprising:

heating the long glass fiber enriched plastic material received in the mould before exerting pressure.

20.

The process of claim 18, further comprising:

trimming the functional structure so as to obtain one or more wiring harness clips.

21.

The process of claim 18, wherein the cavity has the inverse shape of a lip extending along the outer rim area of the door module, the process further comprising:

bending the lip relative to the surface of the structural portion so that a cross section of the lip is at an angle to the surface of the structural portion.

22.

The process of claim 18, further comprising:

trimming the functional structure so as to obtain a lip whose cross section lip is at an angle to the surface of the structural portion.

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